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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

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HAJNIK, DANIEL F	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/611,871
Filing Date: July 03, 2003
Appellant(s): KONYA ET AL.

Robert W. Downs
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/28/2007 appealing from the Office action mailed 12/27/2006.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6995762	PAVLIDIS et al.	2-2006
5818463	TAO et al.	10-1998
6940646	TANIGUCHI et al.	9-2005
20020054032	AOKI et al.	5-2002

Japanese Patent Application 2000267232 (Pub No 2002077944 A), Pub 15.03.02, by Ono Shuji (Fuji Photo Film Co Ltd), all pages (and English abstract and translation).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 16, 17, 21, 24-26, and 29 are rejected under 35 U.S.C. 102(a) as being anticipated by Shuji (Japanese Patent Application Publication 2002-077944, herein referred to as "Shuji").

As per claim 17, Shuji teaches the claimed:

> a pickup device picking up a two dimensional image data of a subject;

By teaching of objective lens 101 inside a camera 100 (see figure 1 and paragraph [0031] of English translation) and by teaching of "the photoed image of two sheets" (paragraph [0021] of English translation) where an image sheet is 2 dimensional.

Shuji teaches the claimed:

> a three dimensional image creation portion obtaining display data for three dimensional display, the display data including image data for a right eye and for a left eye, wherein said three dimensional image creation portion includes,

By teaching of a 3-dimensional scenography generation means to give different parallax to each part of a photographic subject, and to generate the 3-dimensional scenography of a photographic subject (paragraph [0010] of English translation) and by teaching of shifting between the left and

right eyes (paragraph [0038] of English translation). Here, accordingly to the reference, display data for the left eye and right eye are included.

Shuji teaches the claimed:

> a first data process means for generating three dimensional data derived from the two dimensional data; and

By teaching of a 3-dimensional scenography generation means to give different parallax to each part of a photographic subject, and to generate the 3-dimensional scenography of a photographic subject (paragraph [0010] of English translation). Here, the photographic subject is two-dimensional and then is converted into a three- dimensional image.

Shuji teaches the claimed:

> a second data process means for converting the three dimensional data into the image data for the right eye and the image data for the left eye;

By teaching of applying an amount of shifting between the left and right eye viewpoints in order to achieve stereoscopic or binocular-like visual. (paragraph [0038] of English translation). In this situation, the three-dimensional data from one viewpoint can be converted to determine the three-dimensional data for another viewpoint through the shifting.

Shuji teaches the claimed:

> a display unit displaying an image for the three dimensional display based on the display data.

By teaching of an image for right eyes and the image for left eyes are generated by 3-dimensional scenography generation equipment 141 based on the above-mentioned principle, and those images are displayed on a head-mounted display 120 (paragraph [0037] of English translation).

As per claim 16, the reasons and rationale for the rejection of claim 17 is incorporated herein.

Shuji teaches the claimed:

> wherein said parallax information portion calculates said parallax information based on the intensity of light reflected from the subject and on a distance between human eyes

By teaching of a means to compute the distance from the luminescence location of each part by the operation based on the ratio of the reflectivity of each part to which each reflected light image independently photoed with the image pick-up means (paragraph [0016] of English translation).

Shuji teaches the claimed limitation by teaching of an amount for shifting where the image the object for right eyes which constitutes the binocular vision image displayed on a head-mounted display 120, and for left eyes makes shift a pixel from the image of Hara to right and left (paragraph [0038] of English translation).

Shuji teaches the claimed limitation by teaching of seeing the photograph where the viewpoints are spaced equivalent to the parallax of human being's both eyes (paragraph [0003] of English translation).

As per claim 21, Shuji teaches the claimed:

> 21. (Previously Presented) The mobile equipment of claim 17, wherein said pickup device is a single pickup device.

By teaching of objective lens 101 inside one camera 100 (see figure 1 and paragraph [0031] of English translation).

As per claim 24, Shuji teaches the claimed:

> 24. (Previously Presented) The mobile equipment of claim 17, further comprising a three dimensional shutter button to pick up the two dimensional image data, wherein said three dimensional image creation portion obtains the display data in response to press of said three dimensional shutter button.

By teaching of

> The computer 240 in which the image sensor 202 in an endoscope 200 had the function **which controls the function which outputs the signal** which usually **computed and imaged a picture signal** and distance distribution information based on the image of two sheets photoed through the objective lens 201, and the whole endoscope equipment, It usually consists of the image and the 3-dimensional scenography generation equipment 241 **which generates 3-dimensional scenography**
> (paragraph [0047] of English translation)

Here, the shutter button is the control that creates the three dimensional image.

As per claim 25, Shuji teaches the claimed:

> 25. (Previously Presented) The mobile equipment of claim 17, further comprising
>
> a dividing portion for dividing the two dimensional image data picked up by said pickup device into a plurality of blocks; and
>
> a detecting portion for detecting the brightness of each of said plurality of blocks, wherein
>
> said three dimensional image creation portion generates the display data in response to the brightness of each of said plurality of blocks.

By teaching of calculating from the ratio of the brightness of each pixel of the photoed image of two sheets, L1, L2, and L in order to acquire the distance R1 to a photographic subject.

(paragraph [0021] of English translation)

Shuji teaches the claimed limitation by teaching of changing the magnitude of parallax, and may also enable it to determine the magnitude of parallax further in the image equipment by this invention according to the dilation ratio of the image displayed on a display means (paragraph [0024] of English translation).

Here, the image is divided into a plurality of blocks (pixels) where the brightness is detected for each block (because the brightness of each pixel is considered). Further, the display creates parallax. Since the parallax is based upon distance to the photographed subject (and thus the distance based on the brightness by which this distance is calculated from) the display also depends upon the brightness detected.

As per claim 26, Shuji teaches the claimed:

> 26. (Previously Presented) The mobile equipment of claim 17, further comprising
>
> a radiation unit illuminating the subject with light; and
>
> a detection portion detecting the intensity of the light,
>
> wherein said three dimensional image creation portion obtains the display data in response to the intensity of the light.

By teaching of distance acquisition means at coincidence from two or more luminescence locations where the emission irradiation ranges and the exposure means which can irradiate a photographic subject, and by teaching of means to compute the distance from the luminescence location of each part by the operation based on the ratio of the reflectivity of each part to which each reflected light image independently photoed with the image pick-up means (paragraph [0016] of English translation).

Here, the reference teaches of a radiation unit (exposure means which can irradiate a photographic subject) and teaches of a detecting portion (reflected light photoed and image pick-up means), and teaches of display data in response to the intensity of the light by teaching of a distance acquisition means (where the distance is later used to create parallax on the display). Further, since the system is considering the reflectivity of each part due to emission irradiation this reflectivity is also intensity of the light.

As per claim 29, the reasons and rationale for the rejection of claim 17 is incorporated herein.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 7-13, 22, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuji in view of Aoki et al. (US Publication 2002/0054032, herein referred to as "Aoki").

As per claim 7, the reasons and rationale for the rejection of claims 17 and 21 are incorporated herein in regards to the claimed "single pickup device". The reasons and rationale for the rejection of claim 17 is incorporated herein in regards to the claimed "display unit".
Shuji teaches the claimed:

> a parallax information portion determining parallax information of said subject based on a distance between human eyes;

By teaching of applying an amount of shifting between the left and right eye viewpoints in order to achieve stereoscopic or binocular-like visual. (paragraph [0038] of English translation).

Here, in order for the pixel shifting between the left and right eye views to occur the system would have to have the parallax information based on the distance between human eyes (i.e. a standard average distance). Further, Shuji teaches of prior art where the claimed limitation is used by teaching of photoed spacing equivalent to the parallax of human being's both eyes (paragraph [0003] of English translation).

Similarly, the present application teaches using a similar technique by teaching of:

> Processor 105 then provides the three dimensional data with parallax information (S406). At step S406 processor 105 performs **an approximate calculation based on a standard distance between human both eyes** (e.g., approximately 6 cm) (pg. 10, lines 9-11 of specification)

Shuji teaches the claimed:

> a three dimensional image creation portion creating a three dimensional image by applying said parallax information to said image; and

By teaching of a 3-dimensional scenography generation means to give different parallax to each part of a photographic subject, and to generate the 3-dimensional scenography of a photographic subject (paragraph [0010] of English translation).

Shuji does not explicitly teach the claimed:

> wherein said three dimensional image creation portion cuts a human face out of said image picked up, to obtain a face image

Aoki teaches the claimed limitation in figures 7A-7C.

Lastly, the claimed "and provides said face image with said parallax information" can be achieved through the combination of Shuji and Aoki where Shuji provides the parallax information which can be applied to the face image of Aoki.

It would have been obvious to one of ordinary skill in the art to combine Shuji and Aoki. Aoki teaches one advantage of the combination by teaching of "a data transmission method able to realize communication in a state where eye contact is maintained" (paragraph [0015]) where Shuji would benefit from such added functionality through entertaining and interesting communication.

As per claim 8, Shuji teaches the claimed:

> 8. (Original) The mobile equipment of claim 7, wherein said pickup device is a pickup device for picking up a two dimensional image.

By teaching of the photoed image of two sheets (paragraph [0021] of English translation) where an image sheet is 2 dimensional.

As per claim 9, Shuji does not explicitly teach the claimed:

> 9. (Original) The mobile equipment of claim 8, further comprising:
> a communication control portion controlling a communication with another device; and

Aoki teaches the claimed limitation in figure 1, 22.

Shuji does not explicitly teach the claimed:

> a transmission and reception portion allowing a call to and from another device.

Aoki teaches the claimed limitation in figure 1, 25. It would have been obvious to one of ordinary skill in the art at the time of invention to use the claimed feature as disclosed in Aoki

with Shuji. One advantage to such features is the ability to communicate with other users effectively.

As per claim 10, the reasons and rationale for the rejection of claim 7 is incorporated herein.

Shuji teaches the claimed:

> and provides said image of the subject and an image included in said image picked up other than said particular subject with different parallax information, respectively.

By teaching of a 3-dimensional scenography generation means to give different parallax to each part of a photographic subject, and to generate the 3-dimensional scenography of a photographic subject (paragraph [0010] of English translation) where Shuji can perform different parallax for the particular subject (a part of the photographic subject).

Shuji does not explicitly teach the claimed:

> wherein said three dimensional image creation portion selects a particular subject from said image picked up, to obtain an image of the subject

Aoki teaches the claimed limitation in figures 7A-7C by teaching of selecting a subject's face portion. It would have been obvious to one of ordinary skill in the art at the time of invention to use the claimed feature as disclosed in Aoki with Shuji. Aoki teaches one advantage of selecting the face portion by teaching of "a data transmission method able to realize communication in a state where eye contact is maintained" (paragraph [0015]) where selecting the face makes the communication process more realistic through the display.

As per claims 11-13, these claims are similar in scope to those of claims 8, 9, 7, respectively, and are rejected under the same rationale.

As per claim 22, the reasons and rationale for the rejection of claim 9 is incorporated herein.

As per claim 27, Shuji teaches the claimed:

> said three dimensional image creation portion further includes a selection data process means for generating the two dimensional image data of the subject in response to the selection.

By teaching of controlling the output of a signal which generates the three-dimensional image data (paragraph [0047] of English translation).

Shuji does not explicitly the claimed:

> operation keys for receiving an input for selection of a subject from the background in the two dimensional image displayed on said display unit, wherein

Aoki teaches the claimed limitation by teaching of:

> Cut out on the terminal according to the instructions of the user
> (paragraph [0041])
> (selection of a subject)
>
> the entire image input from the imaging means, that is, the camera, is output for the image on the monitor of user. The user specifies a region of the image to cut out that region
> (paragraph [0044])
> (selection of a subject)

It would have been obvious to one of ordinary skill in the to use Aoki with Shuji, Aoki teaches one advantage of using the claimed feature by teaching of "a data transmission method able to realize communication in a state where eye contact is maintained" (paragraph [0015]) where selecting the image adds more customized functionality to the eye contact feature. In addition, the user may find the selection process more interesting than using an automated selection process.

As per claim 28, Shuji does not explicitly teach the claimed:

> 28. (Previously Presented) The mobile equipment of claim 27, wherein said operation keys receive inputs for the selection of a plurality of subjects and said selection data process means generates the two dimensional image data for each of the selected subjects.

Aoki teaches the claimed limitation in figure 1 where a plurality of face images (selected subjects) are shown on screen 23. It would have been obvious to use this feature of Aoki with Shuji in order for the user see both them self and the person you are talking to on the phone at the same time.

5. Claims 15 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuji in view of Pavlidis et al. (US Patent 6995762, herein referred to as "Pavlidis").

As per claim 15, the reasons and rationale for the rejection of claim 17 is incorporated herein. Shuji does not explicitly teach the claimed:

> wherein said parallax information portion calculates said parallax information based on the differences in the brightness between parts of the image

Pavlidis teaches the claimed limitation. For example, Pavlidis in col 15, lines 56-62, states: "Scale factor estimation can be performed independently of the rest of the processing. To estimate the scale factor, two laser beams (e.g., parallel) can be employed to create two bright spots on an object ... A distance between the two bright spots is determined and utilized to calculate the scale factor" where this distance is associated with depth or parallax (where the parallax effect is the difference in depth between two parts of the image).

Pavlidis in col 16, lines 15-17, further states, "At a point where the laser line intersects the object under investigation, a bright spot can be located in the image" where this bright spot is used to determine distance because the bright spot is created through using the two laser beams as described above. The laser beams helps determine the distance (col 15, lines 56-62), and the detecting of bright spots helps using the laser beams for detecting the distance. Thus, analyzing the brightness is used to help determine distance.

As per claim 30, Shuji teaches the claimed:

> wherein said parallax information of said subject is determined based on a distance between human eyes.

Shuji refers to using the distance between human eyes in their respective image forming process in paragraph [0003] (see English translation of Shuji) in order achieve correct binocular vision in the output by basing the right and eye images on human beings distance between the eyes.

Furthermore, the geometry in the situation of using shifting requires an angle difference between the left and right viewpoint (left and right eye viewpoints of the user). There is an angular difference because the left and right eye viewpoints are slightly offset by a given angle. Basic geometry of the setup with these two offset viewpoints requires one to have a distance between the eyes and a distance to the object being seen by the left and right viewpoint. Since, Shuji teaches of shifting the viewpoint to given parallax information, the distance to the object and the distance between the viewpoints (left and right eyes) have to be considered and used by the reference in order to achieve correct output results. Otherwise, the image may look distorted and not have the correct amount of parallax present.

6. Claims 18-20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shuji in view of Taniguchi et al. (US Patent 6940646, herein referred to as "Taniguchi").

As per claim 18, Shuji does not explicitly teach the claimed "switching liquid crystal element". Taniguchi teaches the claimed limitation by teaching of "liquid crystal shutter" (col 2, line 56) and by teaching of "switching of parallax images" (col 2, line 36).

Shuji does not explicitly teach the claimed "deflection angle and patterned phase difference". Taniguchi teaches the claimed limitations by teaching of "guiding display light" (col 2, line 21), "a phase plate with a phase difference" (col 14, lines 37-38), and by teaching of "a checkered pattern" (col 14, line 60).

Shuji does not explicitly teach the claimed "controlling portion". Taniguchi teaches the claimed limitation by teaching of "to control a phase shift state for each block" (col 14, lines 37-38).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Shuji and Taniguchi. One advantage to the combination is provided by Taniguchi, which teaches of displaying a high resolution stereoscopic image without flicker and without special spectacles (col 2, lines 13-16) for parallax images for each of the left and right eyes (col 2, line 2). Shuji would benefit from such added functionality.

As per claim 19, Shuji does not explicitly teach the claimed "prevent an image ... from passing through the pixels". Taniguchi teaches the claimed limitation by teaching of "liquid crystal shutter" (col 2, line 56) where a shutter would require the use of preventing an image

from passing for a given time. It would have been obvious to one of ordinary skill in the art to use this feature Taniguchi with Shuji in order to create a 3D effect on the screen, which can be desirable to the user.

As per claim 20, Shuji does not explicitly teach the claimed "operation keys receiving an input, wherein said controlling portion changes the relationship based on the input".

Taniguchi teaches of a "driving device" (pieces 11 and 12) and "image forming device" (piece 10) in figure 28. Given these teachings, it would have been obvious to one of ordinary skill in the art to use the claimed limitation because the operation keys would provide a convenient and readily known way for the user to control the driving and image forming device.

7. Claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuji in view of Tao et al. (US Patent 5818463, herein referred to as "Tao").

As per claim 32, Shuji does not explicitly teaches the claimed:

> a memory for storing a face geometry model ... wherein said first data process means generates the three dimensional data from the human face image data based on the face geometry model.

Tao teaches these claimed limitations by teaching of:

> The viability of this invention has demonstrated **by animating the quadrangular face model using facial animation parameters** for facial expression and visual speech.
> (col 5, lines 18-20)
> (face geometry model)
>
> wireframe synthesizer 212 takes the output of **the local memory in a mesh encoder 216**, decodes it, and generates a reconstructed mesh of the object

(col 4, lines 35-37)
(memory for storing a face geometry model)

It would have been obvious to one of ordinary skill in the art to combine Shuji and Tao. One advantage to using this feature of Tao with Shuji is to provide a standard and well-proven method of animating face features (col 1, lines 60-61 of Tao) on a display where the animation can enhance the display and output of Shuji.

As per claim 35, this claim is similar in scope to claim 32, and thus is rejected under the same rationale.

8. Claim 23, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuji in view of Aoki in further view of Tao.

As per claim 23, the reasons and rationale for the rejection of claim 7 is incorporated herein in regards to the claimed "extracting a human face image data" and the reasons and rationale for the rejection of 32 is incorporated herein in regards to the claimed "memory for storing a face geometry model".

It would have been obvious to one of ordinary skill in the art to combine Shuji, Aoki, and Tao. One advantage to using this feature of Tao with Shuji and Aoki is to provide a standard and well-proven method of animating face features (col 1, lines 60-61 of Tao) on a display where the facial animation can enhance the display and output of Shuji.

As per claims 33 and 34, these claims are both similar in scope to claim 23, and thus are rejected under the same rationale.

(10) Response to Argument

1) Appellant argues "Shuji discloses a much more complex approach to 3-dimensional scenography generation in a computer and for displaying on a head-mounted display than the present invention, which is more suited for use in a Mobile equipment" (middle of page 14).

The examiner maintains that the prior art rejections in this matter are proper because paragraph [0002] in the specification (see English translation of Shuji) states that the head mounted display is not a required element of the prior art reference but rather only one such option for displaying as a means for displaying. Further, the independent claims as argued only refer to a mobile device in the preamble of the claim and do not place any significant patentable weight to the mobile device limitation in the actual body of the claim.

Appellant argues "On the other hand, Shuji teaches a substantially more complex operation of forming the image for left eyes and the image for right eyes by shifting pixels based on the distance information for each pixel in an image, where the distance information is a distance from the camera to the object. In particular, Appellants submit that Shuji does not disclose applying distance between human eyes to determining parallax information." (middle of page 15).

The examiner maintains that the prior art rejections in this matter are proper because the mere fact that Shuji performs a complex image forming operation (not admitting) does not render the

prior art incapable of reading on a more broad description of a three-dimensional imaging system using parallax information. Further, Shuji refers to using the distance between human eyes in their respective image forming process in paragraph [0003] (see English translation of Shuji) in order achieve correct binocular vision in the output by basing the right and eye images on human beings distance between the eyes.

Furthermore, the geometry in the situation of using shifting results in an angle difference between the left and right viewpoint (left and right eye viewpoints of the user). There is an angular difference because the left and right eye viewpoints are slightly offset by a given angle in order to give the shifting effect in the images. Basic geometry of the setup with these two offset viewpoints (where one is shifted relative to another) requires one to have a distance between the eyes and a distance to the object being seen by the left and right viewpoint. Since, Shuji teaches of shifting the viewpoint to given parallax information, the distance to the object and the distance between the viewpoints (left and right eyes) have to be considered and used by the reference in order to achieve correct output results. Otherwise, the image may look distorted and not have the correct amount of parallax present (i.e. the images may be shifting too little or too much).

The applicant's present application teaches similar logic behind the use of using the eye separation distance in the claimed invention where it states:
Processor 105 then provides the three dimensional data with parallax information (S406). At step S406 processor 105 performs an approximate calculation based on a standard distance between human both eyes (e.g., approximately 6 cm) (pg. 10, lines 9-11 of specification).

Appellant argues "In other words, unlike Shuji, the present invention includes an intermediate process of forming three dimensional data, as well as conversion of three dimensional data into image data for the right eye and image data for the left eye." (middle of page 17).

The examiner maintains that the prior art rejections in this matter are proper because: Shuji teaches the claimed "first processing means for generating three dimensional data derived from the two dimension data" as the claimed language requires. For example Shuji teaches of generating 3-dimensional information by giving different parallax amounts to each part of the photographed subject or scene (paragraph [0010] of English translation). In this reference, the photographic subject is two-dimensional and then is converted into a three-dimensional image. The photograph subject becomes three-dimensional by adding the parallax information to the image.

Further, Shuji teaches the claimed "second process means for converting the three dimensional data into the image data for the right eye and the image data for the left eye" again as the claim language requires.

For example, Shuji teaches of applying an amount of shifting between the left and right eye viewpoints in order to achieve stereoscopic or binocular-like visual. (paragraph [0038] of English translation). In this situation, the three-dimensional data from one viewpoint can be converted to determine the three-dimensional data for another viewpoint through the shifting.

Thus, Shuji addresses all the major points and limitations as set out by the rather broad claim language description in accordance with claims 17 and 29, thus the prior art rejection is proper.

Appellant argues that "The prior art must suggest the desirability of the modification in order to establish a prima facie case of obviousness" (middle of page 18).

The examiner maintains that the prior art rejections in this matter are proper because explicit motivation is not required to be disclosed in the references to make a prima facie case of obviousness. Common sense can be used by those skilled in the art to demonstrate why some combinations would have been obvious where others would not." Id. at 1161, 82 USPQ2d at 1687 (citing KSR, 127 S.Ct. 1727, 1739, 82 USPQ2d 1385, 1395 (2007) ("The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.").

KSR forecloses appellant's argument that a specific teaching is required for a finding of obviousness. KSR, 127 S.Ct. at 1741, 82 USPQ2d at 1396. As noted by KSR: Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. KSR, 127 S.Ct. at 1742, 82 USPQ2d at 1397.

Appellant argues "Shuji's distance to each object is not disclosed as being a focal point that together with distance between human eyes are used for calculation of parallax information (e.g.,

parallax angle). Appellants submit that there is no teaching or suggestion of determining parallax information (e.g., parallax angle or) based on distance between human eyes, then creating a three dimensional image by applying the parallax information" (middle of page 19).

The examiner maintains that the prior art rejections in this matter are proper because Shuji teaches of determining the parallax in part from the distance between human eyes and distance information by teaching of shifting pixels to create a parallax affect by applying a shifting in the image to create a separate right and left eye viewpoint. (paragraph [0038] of English translation, this same point is further explained above in the response to arguments section).

Here, the reference teaches of considering the shifting amount based upon the distance between human eyes to determine the parallax of a photographed subject. This is an important factor in configuring the parallax and creating the proper effect. One of ordinary skill in the art can recognize that creating the stereoscopic effect and the general geometry requires a good judgment for the distance between the eyes otherwise the image may not appear clear but rather distorted. The shifting between viewpoints requires a geometrical separation between the eyepoints or viewpoints, and a separation between the user and the object being viewed. Paragraph [0003] of English translation of Shuji teaches of spacing a photograph based upon the standard distance between human eyes in order to use parallax for the system. Lastly, attention should be direct towards the applicant's present application, which teaches similar logic behind the use of using the eye separation distance in the claimed invention where it states: Processor 105 then provides the three dimensional data with parallax information (S406). At step S406

processor 105 performs an approximate calculation based on a standard distance between human both eyes (e.g., approximately 6 cm) (pg. 10, lines 9-11 of specification).

Furthermore, applicant appears to be arguing features, which are not explicitly claimed. For example, the arguments in the middle of page 19 refer to the use a parallax angle, alpha. However, the claim language explicitly recites the use of parallax information and not necessarily a parallax angle, where the parallax information limitation is a more broad description.

Appellant argues "Aoki does not disclose determining parallax information for the face image based on the distance between human eyes, and thus does not make up for the deficiency in Shuji." (bottom of page 19).

The examiner maintains that the prior art rejections in this matter are proper because the reference of Shuji is relied upon for teaching the claimed feature in regards to claim 7 in the previous office action. Shuji teaches the concept of determining parallax information based on the distance between human eyes for the same reasons as stated above. This concept is applied to the face image Aoki as shown in figures 7A-7C through the combination of Shuji and Aoki.

Appellant argues "Appellants submit that Pavlidis does not disclose image analysis that determines distance of objects moving against a background in the image. Furthermore, Pavlidis

does not disclose image analysis that calculates parallax information based on differences in the brightness between parts of the image." (middle of page 21).

The examiner maintains that the prior art rejections in this matter are proper because Pavlidis teaches the claimed concept in cols 15-16. For example, Pavlidis in col 15, lines 56-62, states: "Scale factor estimation can be performed independently of the rest of the processing. To estimate the scale factor, two laser beams (e.g., parallel) can be employed to create two bright spots on an object ... A distance between the two bright spots is determined and utilized to calculate the scale factor". Pavlidis in col 16, lines 15-17, further states, "At a point where the laser line intersects the object under investigation, a bright spot can be located in the image" where this bright spot is used to determine distance because the bright spot is created through using the two laser beams as described above. The laser beams helps determine the distance (col 15, lines 56-62), and the detecting of bright spots helps using the laser beams for detecting the distance. Thus, analyzing the brightness is used to help determine distance.

Appellant argues "Appellants disagree that Pavlidis actually teaches calculation of, e.g., distance to the camera, based on differences in brightness between parts of an image. Instead, Pavlidis merely discloses that the distance to the camera can be measured (e.g. Abstract)." (top of page 22).

The examiner maintains that the prior art rejections in this matter are proper because Pavlidis teaches of Pavlidis in col 15, lines 56-62, states: "Scale factor estimation can be performed

independently of the rest of the processing. To estimate the scale factor, two laser beams (e.g., parallel) can be employed to create two bright spots on an object ... A distance between the two bright spots is determined and utilized to calculate the scale factor". Pavlidis in the abstract further states the distance is measured by using this scaling factor.

Appellant argues "Thus, it appears that the Examiner considers that Tao teaches a modification of Shuji's 3-dimensional scenography generation means." (top of page 24).

The examiner maintains that the prior art rejections in this matter are proper because Tao is used as an enhance of Shuji to teach additional claimed concepts (i.e. a geometric model for face geometry which Shuji does not explicitly teach). Tao is not intended to replace Shuji but rather to incorporate features of its system into Shuji. Through the combination all the claimed limitations are taught.

Appellant argues "The Final Office Action does not provide evidence of, and Appellants submit that none of the cited references teach or suggest, that the claimed first data process means "generates the three dimensional data from the human face image data based on the face geometry model." Thus, Tao fails to make up for the deficiencies in Shuji." (middle of page 24).

The examiner maintains that the prior art rejections in this matter are proper because Tao teaches the claimed feature by teaching of "The viability of this invention has demonstrated by animating the quadrangular face model using facial animation parameters for facial expression and visual

speech. (col 5, lines 18-20) (face geometry model) where this face model can be three-dimensional.

Further, Tao teaches of creating a face geometric model by using an image analysis techniques on video sequences (col 3, lines 41-45). The image analysis techniques of Tao can be applied to the images or textures in the system of Aoki in figures 7A-7C where image analysis can be performed by Tao on a cut-out facial image in Aoki. After image analysis is applied, this data can be incorporated further into the face geometry model of Tao to meet the claimed limitations.

Appellant argues "However, the claimed invention requires a feature of conversion of three dimensional data, which is generated based on a face geometry model, into image data for the right eye and image data for the left eye. Appellants submit that neither Shuji nor Tao disclose conversion of three dimensional data, generated based on the face geometry model, into image data for the right eye arid image data for the left eye." (bottom of page 24).

The examiner maintains that the prior art rejections in this matter are proper because Shuji teaches of conversion of image data for the right eye and the left eye (paragraph [0003], see the English translation). Tao teaches of the face geometry model (col 5, lines 18-20). Through the combination of Shuji and Tao all the claimed limitations are taught.

Appellant argues "Tao does not teach generation of three dimensional data from two dimensional data, based on a face geometry model and subsequent conversion of the three dimensional data

into an image for the right eye and an image for the left eye, as required in the claims as a whole" (2nd paragraph on page 25).

The examiner maintains that the prior art rejections in this matter are proper because the rejection relies upon the combination of references along with motivation to combine these references for teaching all the claimed limitations. Further, Shuji and Tao teaches the claim limitation for the same reasons as argued immediately above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Daniel Hajnik

Daniel Hajnik

Conferees:

Ulka Chauhan, Supervisory Patent Examiner

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER

Mark Zimmerman, Supervisory Patent Examiner